

RN98170

Serial No: 09/856,808

Amendment

polymers resulting from the partial hydrolysis of the H1 monomers, R⁴ being methyl, ethyl, propyl, isopropyl, butyl, isobutyl, hexyl, 2-ethylhexyl, octyl, decyl or dodecyl.

Marked-up amended claims according to 37 C.F.R. 1.121 are submitted in an attached document. Added matter is shown by underline and deleted matter is shown by strike-through.

It is asserted that these amendments do not add new matter and are supported by the specification and claims as originally filed. Entry of these claims is respectfully requested.

REMARKS

Claims 14-26 have been rejected.

Claims 14, 21, and 24 have been amended.

Claims 15-20, 22, 23, 25, and 26 are kept unchanged.

Claims 14-26 are pending in the application.

Objected claim 14 has been amended to correct the spelling of "functionalization".

Also the word "cyclanic" has been replaced with: - -cyclic- - in lines 28 and 42 and a space has been added in line 1.

In claim 21, a space has been added between "according to" and "claim".

In claim 24, and, therefore in dependent claim 25, the recitation of the curing catalyst has been amended to read - - the H1 monomers of formula (IV) or the H2 polymers - -, instead of "the H1 monomers of formula (IV) *and* the H2 polymers".

Applicant believes that the above amendment makes moot the rejection under 35 U.S.C., first paragraph, relative to the claims 24 and 25.

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The rejection of claims 14-23, 25, and 26 under 35 U.S.C. § 103 (a) as being unpatentable over Cocco et al. (U.S. Patent No.: 5,079,324), in view of Shiono et al., (U.S. Patent No.: 5,525,660), and Myake et al. (U.S. Patent No.: 6,214,930), is respectfully traversed and is addressed in light of the comments below.

The instant invention relates to single-component polyorganosiloxanes compositions which cross-link into adherent elastomers in the presence of moisture. The cross-linking is based on the reaction of an alpha-omega-dihydroxypolysiloxane with a polyalkoxysilane in the presence of a specific catalyst.

Cocco teaching is similar to step 1 of the instant claims, wherein an alpha-omega-dihydroxypolysiloxane is functionalized with a polyalkoxysilane in the presence of a lithium-based catalyst. However, Cocco fails to teach the use of a particular silicone hydroxylated resin and the selection of a particular titanium condensation catalyst.

On the contrary, Cocco teaches that any catalyst may be used (please see column 2, lines 27-31 of the Cocco patent).

The unexpected advantage of the elastomer made by the process of the instant invention is to provide a single component organopolysiloxane composition which does not necessarily resort to the use of an agent for improving the adhesion.

Furthermore, the composition of the invention makes it possible to obtain transparent or translucent elastomers with very good adhesion to various substrates (please see page 3, lines 4-12 of the instant specification and working examples 1 and 2). In that connection, it should be stressed out that the use of an agent for improving the

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adhesion is compulsory according to Shiono's teaching (please see column 2, lines 33-41 of the Shiono patent.

Moreover, the teaching of Shiono is limited to the use of a linear hydroxylated silicone oil and Shiono is mute on the use of a mixture of a linear hydroxylated silicone oil and of a particular silicone hydroxylated resin. Also Shiono uses the same catalyst (component F) in order to functionalize the oil with a polyalkoxysilane and cross-link the composition.

According to the instant invention two utterly different catalysts must be used.

Myake teaches the use of a brenched hydroxylated silicone oil in a one-package RTV silicone composition. Therefore, that composition does not comprise neither a reactive linear diorganopolysiloxane having a hydroxyl group at each chain end, nor a silicone hydroxylated resin. Furthermore, the one-package RTV silicone composition does not comprise any catalyst, although an optional catalyst may be used (please see column 6, lines 36-42 ot the Mayke patent). However, Myake does not teach, nor even suggest the use of two different particular catalysts in order to functionalize the oil with a polyalkoxysilane and cross-link the composition.

The composition of the instant invention cannot be retrieved only by the mere combination of the three cited documents either. If such a combination is performed, it is impossible to obtain a composition having two different catalysts, a hydroxylated linear silicone oil, and a hydroxylated silicone resin.

For these reasons, Applicant respectfully requests that the Examiner now reconsider and withdraw the rejection of claims 14-23, 25, and 26 under 35 U.S.C. § 103 (a) as

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being unpatentable over Cocco et al. (U.S. Patent No.: 5,079,324), in view of Shiono et al., (U.S. Patent No.: 5,525,660), and Myake et al. (U.S. Patent No.: 6,214,930).

In view of the preceding remarks, it is asserted that the patent application is in condition for allowance. Should the Examiner have any question concerning these remarks that would further advance prosecution of the claims to allowance, the examiner is cordially invited to telephone the undersigned attorney at (609) 860-4180.

A notice of allowance is respectfully solicited.

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F/Brevet/RN98170 amend

Respectfully submitted,

By 

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Marked-up Claims:

Please amend claim 14 as follows:

14. (Amended) Single-component organopolysiloxane compositions which are stable on storage in the absence of moisture and which crosslink to translucent and adherent elastomers in the presence of moisture, made in a single closed reactor with stirring, by the process, batchwise or continuous, comprising the successive following steps 1 to 3:

- step1: ~~functionalization~~ ~~functionalization~~ by reacting a mixture of at least one reactive linear diorganopolysiloxane A comprising a hydroxyl group at each chain end, of formula (I) defined below, at least one hydroxylated organopolysiloxane resin B, as defined below, presenting in its structure at least two different units, at least one polyalkoxysilane C as defined below, optionally, at least one aliphatic C₁ to C₃ alcohol E, and, optionally, at least one nonreactive linear diorganopolysiloxane F as defined below, said ~~functionalization~~ ~~functionalization~~ being carried out in the presence of a catalytically effective amount of a ~~functionalization~~ ~~functionalization~~ catalyst D, provided that said catalyst is not an organic titanium derivative,
- step 2: blending or compounding by adding in any order into the reacted mixture obtained in step 1, which is kept stirred, an inorganic filler G comprising an amorphous silica in the form of a solid, an effective amount of a curing catalyst H as defined below, comprising at least one organic titanium derivative, optionally, at least

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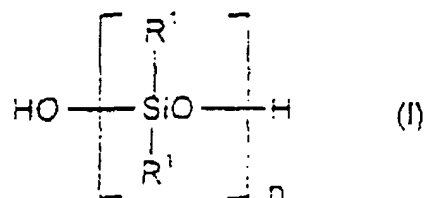
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one nonreactive linear diorganopolysiloxane F as defined below, and ,optionally, at least one auxiliary agent I, and

- step 3: subjecting the blended or compounded mixture obtained in step 2, which is kept stirred, to a devolatilization operation carried out under a pressure below atmospheric pressure,

wherein

- the reactive linear diorganopolysiloxane A is of formula (I):



wherein:

R¹ substituents, which are identical or different, represent an aliphatic, cyclic cyclane or aromatic, saturated or unsaturated, substituted or unsubstituted, C₁ to C₁₃ monovalent hydrocarbonaceous group,

n has a value sufficient to confer, on the diorganopolysiloxanes of formula (I), a dynamic viscosity at 25°C from 1 000 to 1 000 000 mPa·s,

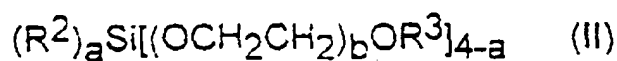
- the hydroxylated organopolysiloxane resin B exhibits in its structure, at least two different units selected from the group consisting of the units of formulae (R¹)₃SiO_{1/2} (M unit), (R¹)₂SiO_{2/2} (D unit), R¹SiO_{3/2} (T unit) and SiO₂ (Q unit), at least one of these units being a T or Q unit, said R¹ groups, which are identical or different, being as

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defined above in formula (I) , said resin containing hydroxyl groups and having a content by weight of hydroxyl group ranging from 0.1 to 10%,
the polyalkoxysilane C is of formula (II):



wherein:

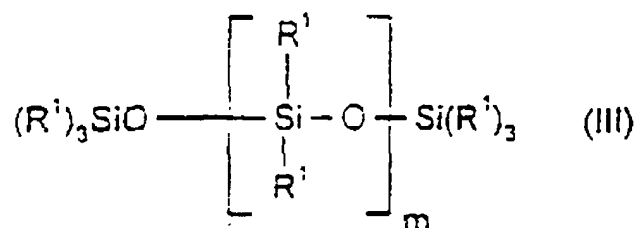
R^2 represents an aliphatic, , cyclic cyclane or aromatic, saturated or unsaturated, substituted or unsubstituted, C_1 to C_{13} monovalent hydrocarbonaceous group

R^3 , which is identical or different, represents a linear or branched C_1 to C_8 alkyl group,

a is zero or 1,

b is zero or 1;

- the nonreactive linear diorganopolysiloxane F is of formula (III):



wherein:

R^1 , which is identical or different, is as defined above in formula I,

m has a value sufficient to confer, on the polymers of formula (III), a dynamic viscosity at 25°C from 10 to 200 000 mPa·s;

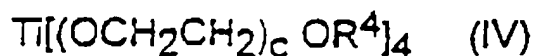
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- the catalyst H is selected from the group consisting of H1 monomers and H2

polymers, H1 monomers being of formula (IV)



wherein:

R^4 , which is identical or different, represents a linear or branched C_1 to C_{12} alkyl group,

c is zero, 1 or 2,

provided that when the c symbol represents zero, R^4 has from 2 to 12 carbon atoms

and, when the c symbol represents 1 or 2, R^4 has from 1 to 4 carbon atoms,

H2 polymers resulting from the partial hydrolysis of monomers of formula (IV) in

which the R^4 symbol has the above mentioned meaning with the c symbol

represent zero.

Please amend claim 21 as follows:

21. (Amended) Compositions according ~~to claim 14~~ ~~to claim 14~~ 14, wherein the catalyst D is a lithium hydroxide of formula LiOH or $\text{LiOH} \cdot \text{H}_2\text{O}$.

Please amend claim 24 as follows:

24. (Amended) Compositions according to claim 14, wherein the curing catalyst H is an organic titanium derivative including the H1 monomers of formula (IV) ~~or~~ ~~and~~ the H2 polymers resulting from the partial hydrolysis of the H1 monomers, R^4 being methyl, ethyl, propyl, isopropyl, butyl, isobutyl, hexyl, 2-ethylhexyl, octyl, decyl or dodecyl.